

Gonorrhea

Name : Gonus means semen rhea means Flow
Albert Neisser who discover the organism *N. gonorrhea*

Pathology:

N. gonorrhea are G^{-ve} diplococci, Non sporing arranged in pairs (Kidney shaped), move by twitching motility.

N. gonorrhea Likes Columnar epithelium so there main sites are:

① in males → Littre's gland, Cowper's gland, Prostate, epididymis, Seminal vesicle.

② in Females → Skene gland, Bartholin duct, endocervix Fallopian tubes.

③ in both male, female → Urethra, Rectum, Oropharynx, Conjunctiva.

Virulence Factors:

[1] Pilli: → Help attachment and protect it from urine flow, mucous secretions.

→ Show antigenic variation → Lead to difficult vaccine against it.

[2] Production of Endotoxin → Cause it contain Lipopolysaccharide.

[3] Inhibition of immunity: By

① Protease enzymes → inactivate IgA at mucosal surface.

② Variation of Outer membrane proteins (Protein II) which called phase variation

Pathological effect on Mucosa:

- 1] Patchy destruction \rightsquigarrow Burning sensation, Painful micturition
- 2] PMN cells in submucosa \rightsquigarrow Pus formation, discharge
male > female
- 3] Production of Fibrous tissue in untreated cases Lead to obstruction of epididymis and Fallopian tube \rightarrow Infertility

Mode of infection:

1] Sexual

- Heterosexual when try infection is in urethra
- Homosexual " " " " " Rectum
- Orogenital " " " " " pharynx

2] Non Sexual

- Neonatal \rightarrow at delivery \rightarrow Cause "ophthalmia neonatorum"
- Childhood \rightarrow Causes Vulvovaginitis by contaminated towels & +
- adult hood \rightarrow by contaminated Towels, Lavatory seats

clinical picture $\begin{cases} \text{of male} \\ \text{of Female} \\ \text{of both male and Female} \\ \text{of infant, children} \end{cases}$

* Uncomplicated cases II clinical picture of Male

Symptoms:

- IP \rightarrow 2 days — 2 weeks. 15% Asymptomatic
- Burning micturition, dysuria, urgency, terminal Haematuria in Posterior urethritis.
- Urethral discharge: profuse, yellow, Puerulent or scanty, mucoid like Non gonococcal urethritis

Signs:

- * Penis \rightarrow inflamed, Swollen urethral meatus with discharge, tender
- * LN \rightarrow Enlarged LN inguinal.
- * 2 glass urine test to determine Ant. or Post. urethritis

* Complicated cases:

Complications:

① Skin \rightarrow penile: Lymphangitis, edema \rightarrow Bull Head clap syndrome
 severe discharge lead to inflammation of $\begin{cases} \text{perpuce (Posthitis)} \\ \text{inf. glands (Balanitis)} \end{cases}$

② Urethra: Acute inflammation \rightarrow Peri-urethral Abscess \rightarrow severe pain, swelling
 If Drainage by Aspiration not incision

if neglected or incision \rightarrow Fistula which may open in perineum lead to (Watering-can perineum).

Finally if neglected \rightarrow Fibrosis \rightarrow stricture urethra, Cancer Retention of urine, Oliguria.

③ Tysonitis: inf. of tyson gland. Asymptomatic or swelling on both sides of Frenulum. Diagnosis by urethroscopy.

④ Litttritis: inf. of Littre's gland. tender swelling of roof, sides of urethra

⑤ Cowperitis: inf. of Cowper's gland \rightarrow Painful defecation, tender painful swelling in perineum.

⑥ Prostatitis: Fever, Painful defecation, Constipation.

⑦ Seminal vesiculitis: → haemospermia.

⑧ Epididymitis: Acute scrotal pain referred to lower Abdomen.

2 Clinical picture of Female uncomplicated case complicated case

@ Uncomplicated cases

Symptoms:

- IP 2 days — 2 weeks 50% Asymptomatic
- Burning micturation, urgency.
- Genital discharge better name than vaginal discharge
cause it may be from cervix or urethra not from vagina.

Signs:

- Inflamed urethral meatus + Pus
- Cervix → Enlarged, congested, mucopurulent discharge.
- enlarged inguinal LN

@ Complicated Cases

① Skin: → Discharge: Vulvitis, Vaginitis is very rare cause they are protected against gonococci (Mucosal defense)

→ Rectum → Proctitis + tenesmus (continuous feeling to pass stool)

② Urethra: Like male (Periurethral abscess → Fishula → Stricture)

③ Glands:

→ Cervical glands: it's ^{size} racemose in nature so help in ^{chronicity} ~~also~~ with formation of (Nabothian Follicle) which are bluish cysts result from obstruction of the ducts.

→ Skenitis: inf. of skene's gland (Prostate in male)

drop of Pus on milking the urethra. with swelling on both sides of urethra can be felt by index finger in the vagina

→ Bartholinitis: Sever pain that prevent sitting or walking.

Swelling, Redness of lower third of Libia majora

it can be felt by index finger in vagina and thumb on lower Libia majora

④ Internal organs: neglected cases lead to spread of infection to endometrium, Fallopian tube → Pelvic inflammatory disease

[3] clinical picture of both male, female

(a) extra genital Gonorrhea

- ▶ Gonococcal Conjunctivitis
- ▶ Oropharyngeal Gonorrhea
- ▶ Rectal gonorrhea

(b) Disseminated Gonorrhea

- ▶ Gonococcal iridocyclitis.
- ▶ Gonococcal Arthritis
- ▶ Gonococcal Peri hepatitis
- ▶ Gonococcal Dermatitis
- ▶ Gonococcal Septicemia.

(a) Extra genital gonorrhea.

- ▶ G. Conjunctivitis: rare caused by contaminated towels, fingers. Symptoms: Swelling of eyelid, purulent discharge, Congestion, Keratitis, Corneal ulcers.
- ▶ Oropharyngeal gonorrhea: Oro-rectal Contact. Common in homosexual male. S/P sore throat, Mucopurulent exudate, inflamed Lip, tongue, palate, uvula.
- ▶ Rectal gonorrhea: Anal intercourse in homosexual. Ano-rectal infection in females. (Asymptomatic)

(b) Disseminated (Metastatic) gonorrhea.

Factors help in disseminated gonococcal infection

Host Factor

- Menstruation
- weak Complement (5, 6, 7, 8)
- Presence of circulating immune complex

organism Factor

- * According to Auto type they are highly sensitive to penicillin

- * According to Antigenic types because of marked virulence of these lipopolysaccharides they have marked resistance to bactericidal (IgM)

- ▶ Gonococcal iridocyclitis: result from blood stream spread but Conjunctivitis occurs from direct contamination.

► Gonococcal Arthritis :

More in Females - Large Joints . (suppurative arthritis) → Fever
Sever arthralgia, Red red skin over the joint . Swelling due to
inflamed synovial membrane. it ends with destruction and
An Kylosis . X-ray shows destruction of Cartilage, narrow
joint space . - Aspiration, culture is Diagnostic.

► Gonococcal Perihepatitis [Fitz - Hugh - Curtis syndrome]

inflammation of Liver Capsule. by ~~direct~~ Blood spread in
both male and Female but it may be due to peritoneal
Spread in Females only along the Fallopian tubes.

C/P Fever, nausea, Pain in Rt upper Abdomen radiating
to shoulder increased by cough.

Complicated with (Violin - string) Adhesions between
Liver, diaphragm.

► Gonococcal dermatitis :

FHMA, Skin eruption (vesicular, Petstular) lesions on
erythematous patches they may become Haemorrhagic.

Mucous membrane → oral ulcers. The lesion is due to
Embolization of Capillaries by gonococci and release of
endotoxins after phagocytosis.

► Gonococcal septicemia.

in immuno compromised patient

Skin rash, Fever, arthralgia, hepatitis, osteomyelitis
Carditis, meningitis.

[4] clinical picture in infant, children.

[1] Eye "Ophthalmia Neonatorum"

purulent discharge in the first 3 weeks from birth.

Gonococci is responsible for 20% of cases in 1st week.

Chlamydia is " " 80% " " 2nd, 3rd weeks.

C/P: Swollen Lids, Congested Conjunctiva, pus, Enlarged LN (periauricular LN) Corneal ulcer, blindness

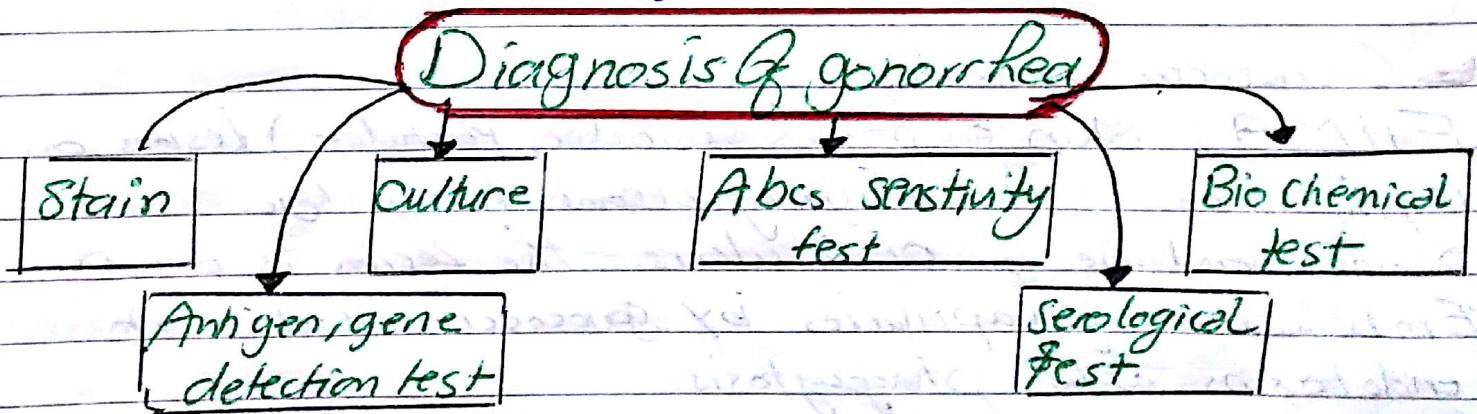
Rx topical + systemic Antibiotics.

[2] Genital infection:

in boys or girls due to child abuse

Common in girls due to thin, alkaline vagina before puberty

C/P: Vulvovaginitis, dysuria, genital discharge, Proctitis.



the most accurate technique is Culture, Stain

III stain $\left\{ \begin{array}{l} \text{Gram stain} \\ \text{Methylene blue} \\ \text{Immunofluorescence} \end{array} \right.$

① Gram stain:

Gonococci are G^{-ve} Kidney shape diplococci arranged in pairs found intra and extra cellular (Leucocytes)

② Methylene blue:

it's more rapid but need special condition for ~~preservation~~ preservation [Darkness, and 4°C (temp.)]

③ Immunofluorescence stain:

Using some Fluorescent dyes (eg Fluorescein) which conjugate with Ig to form conjugate which react with gonococci and make fluorescent under ultraviolet microscope.

advantages: \uparrow sensitivity Cause it detect even Killed gonococci

disadvantages: $\rightarrow \downarrow$ specificity Cause it react with meningococci
 \rightarrow Not useful in Follow up Cause can't differentiate bet Living and Killed gonococci.

[2] Culture

the high diagnostic value is smear-culture. Combination

Culture is indicated in-

* Female

* Asymptomatic male

* Extra genital gonococcal infection

* Disseminated G.

Types of Culture:

- ① Transport medium → To transport the sample to another far place
- ② Growth medium → For growth and inhibition of growth another organism
- ③ Mixed → (Trans-growth) medium.

① Transport medium: (Stuart's medium)

Keep the gonococci alive for 1-3 days it contains:

1. Agar
2. Thioglycolic acid " Reducing agent (Acidic)
3. NaOH " Neutralizing the acid
4. Buffer
5. Methylene blue indicator of reduction. if the medium turns blue it's (unfit) if colourless means (it fit).

② Growth medium [Modified ~~by~~ Thayer martin]

the medium is Enriched with chocolate agar, CO₂ 5%
pH 7.5, Moisture 70%, 36°C Temp.
and become Selective by adding:

- ▶ Vancomycin to inhibit growth of G⁺ve organism
- ▶ Sodium Colistimethate " " " G⁻ve
- ▶ Nystatin " " " Yeast
- ▶ Trimethoprim " " " Proteus.

after 48 hours it shows colonies as glistening white soft rounded that are of 4 types:

- type I, II → Small pigmented colonies (Pathogenic cause contain Pili)
- type III, IV → Large - Non pigmented (Non pathogenic) No Pili

③ Trans growth medium: (Biological environmental chamber)

it's formed of Pocked sized plate containing:

- * Thayer martin medium
- * CO_2 generating tablets.
- * Paper strips with oxidase reagent.

the sample is incubated for (48) h at (36°C)

gonococci can be easily identified by oxidase paper strips.

3 Antibiotic sensitivity tests.

important to ~~diff~~ show Relative or absolute resistance of gonococci or highly sensitive to Antibiotics.

1 Disc method:

Discs contain Antibiotics to be tested. we measure the diameter of the area of inhibition of the growth of the organism around the disc.

2 Tube dilution method:

the same idea of Disc method but we use serial dilutions of the antibiotics are used in tubes.

3 Chromogenic Cephalosporin test:

Gonococci are mixed with chromogenic Cephalosporin (contain β -lactam ring). if the gonococci change the colour from yellow to Red it means it contain ~~β -lactam~~ β -lactamase enzyme ie it's total or Absolute resistance. it means:

No effect of Antibiotic even if we increase the dose

[4] Biochemical and Nutritional tests

① Oxidase Reaction:

- Small amount of Fresh oxidase reagent added to gonococci colonies it turn pink → purple → black in few seconds.
- it's Not specific for gonococci but can help in detection of gonococci in mixed colonies.

② Fermentation Reaction:

- 4 chocolate agars Contain Glucose, Maltose, lactose, Sucrose.
- we add phenol red as indicator of acid production.
- Fermentation i.e. change the colour from Red to Yellow

this test detect definitely *N. gonorrhoea* from other *Niesseria* types.

N. gonorrhoea → Glucose only.
N. Meningitis → Glucose + Maltose
N. lactamica → " + " + Lactose
N. pharyngis sicca → " + " + Sucrose
N. catarrhalis → NO Fermentation.

③ Auxotyping: Auxé = growth in greek.

Auxotyping is a classification system for Gonococci according to their needs for growth.

the main 3 types are AUX Arginine, Uracil, tyro Xanthine they are found in:

1. Asymptomatic urethritis in males
2. Disseminated gonorrhoea
3. high sensitivity to penicillins

[5] Antigen and gene detection.

① ELISA: Enzyme linked Immunosorbent Assay

it depends on Gonococcal Antigen. By colour change in Spectrophotometer it's Easy, Rapid, Specific method

② PCR polymerase chain reaction

③ LCR Ligase chain reaction

PCR and LCR depend on detection of gonococcal gene. (More diagnostic)

it's easy but slow time, don't detect Antibiotic sensitivity.

[6] Serological tests.

- depend on the serological classification of the proteins found on the outer cell membrane of gonococci.
- it can be done by Co-agglutination reaction that classified these proteins into serogroups [W1, WII, WIII]
- these test is good in detection of Asymptomatic carriers

Treatment of Gonorrhea

- ① Instructions
- ② Rx of uncomplicated
- ③ Rx of complicated
- ④ Fup

① Instructions:

- Partner should be treated to avoid Reinfection.
- Avoid sexual activity to avoid the spread of infection.
- Avoid self examination to avoid Traumatic urethritis.
- Avoid self treatment by Antiseptic to avoid chemical urethritis.

② Treatment of uncomplicated cases

① Antibiotics:

oral (combination of:)

Single dose of

cefixim 400
ofloxacin 400
eiprofloxacin 500

parental (combination)

Single dose of
ceftriaxone 250 mg IM

+
doxycycline 100 mg 1x2x7 for chlamydia.

- if the pt is allergic from Cephalosporin → ~~spec~~ spectinomycin 2g IM
- if the pt allergic to Doxycycline → Erythromycin 500 → 1x4x7
→ Azithromycin 1g once

③ Types of Resistances:

Chromosomal Resistance

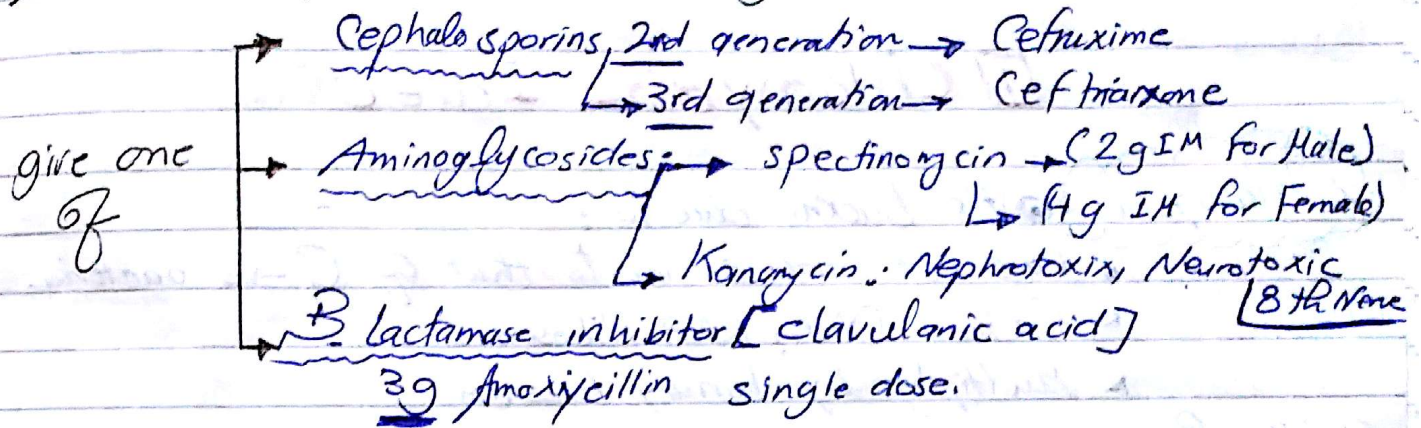
- Due to chromosomal mutation at the sites (Pen A, Pen B, Mtr) →
- ↑ Permeability of the outer membrane to penicillin → Resistance
- Partial or low level Resistance
- ↑ the Antibiotic dose may be effective
- May Not result in Rx Failure

Extra chromosomal (Plasmid) Resistance

- Extra chromosomal DNA (plasmid) produce β lactamase enz which destroy the β lactame ring in penicillin → Resistance
- Complete or total Resistance.
- ↑ the dose is not effective
- Result in Rx Failure.

[3] Treatment of Complicated Cases:

A) Cases with Penicillinase Producing strains :-



B) Ophthalmia Neonatorum :-

• Preventive Rx: ① check mother

② Rx of baby: Silver Nitrate 1% Eye drops for gonococci only.

erythromycin or tetracycline for chlamydia.

• Definitive Rx: Topical Rx is not effective alone

Systemic Rx ceftriaxone IM (25-50)mg/kg
maximum 125mg.

C) Cases with Abscess:-

pre urethral, Bartholin, Prostatic, Tyson gland (Abscess)

Rx By **Aspiration** Not by incision to avoid Fistula

d) Rx of Cases with pelvic inflammatory disease.

[4] F. up (Post treatment follow up)

▶ After 1 week → (Gram stain, culture) for gonorrhea.

▶ After 2 weeks → check up to detect any complications.

▶ After 3 months → Serological test of syphilis.

Non Gonococcal Urethritis

① Chlamydia

② Mycoplasma

1 Chlamydial Infection.

Chlamydia

• it's bacteria due to:

- ▶ have cell wall similar to that of G^{-ve} bacteria.
- ▶ Contain DNA, RNA, Ribosomes.
- ▶ Multiply by binary fission

• it's has viral features:

- ▶ Small size
- ▶ obligatory intracellular parasite.

□ classification of chlamydia

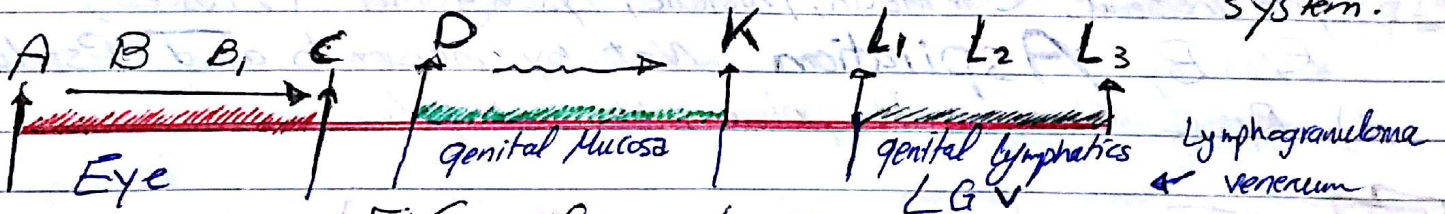
C. Trachomatis affect (Humans)

- ▶ Produce Inclusion bodies contain glycogen which stained by iodine, Sensitive to Sulphonamides.

C. Psittaci (Birds)

- ▶ No glycogen
- ▶ NO stain
- ▶ Not sensitive to Sulphonamide

□ Classification of C. Trachomatis according to affected system.



2 phases: [48-72 hours]

1 Extracellular phase "Elementary body" the infective phase.

attachment to host cell → phagocytosis → Not ingested due to ↑ virulence → Converted to 2nd phase (Initial body)

2 Intracellular phase "Initial body": this body uses the host cell to produce chlamydial DNA, Proteins then divided by binary fission followed by conversion to elementary bodies → Rupture of the cell → Release of Elementary bodies to infect other host cell

1) Clinical picture of chlamydial infection:

(1) Chlamydia (L₁, L₂, L₃) → Lymphatics → Lymphogranuloma venereum.

(2) Chlamydia (D → K) genital mucosal affection:-

similar to gonorrhea but differ in some points shown in:

Reiter's syndrome

Non gonococcal urethritis

2) Difference bet. gonococcal and Non gonococcal urethritis:

→ Longer incubation period 1-5 weeks

→ May be Asymptomatic or there may be scanty discharge which is thick, purulent.

→ May be there's no symptoms except itching.

3) Reiter's syndrome = SARA = sexually Acquired Reactive Arthritis.

▶ Triad of Urethritis + Conjunctivitis + Arthritis (+) Mucocutaneous manifestations.

▶ Def: episode of arthropathy occurring within 1 month of urethritis or cervicitis

▶ Causes: unknown but may be:

① Genetic: pt have +ve HLA-B27

② Infective: after gonorrhea or NGU

③ Immunologic: pt have high Antichlamydial Ab titres.

▶ C/P it occurs after infection of urethra, Cervix, Colon.

[1] Mucocutaneous: manifestations of Urethritis (+)

• Painless erosive dermatitis + small ulcer in glans penis in ♂ and small ulcer in Vulva in ♀ lead to Circinate balanitis, Uthritis.

• Small erosions, ulcers of the mouth.

• Skin: scaly, erythematous psoriasisiform Patch in palm and sole called Keratoderma blenorrhagica.

[2] Articular: Arthritis: Non suppurative, occur after 1 month of urethritis the 1st joint is Sacroiliac 2nd Knees Pain, tenderness, effusion. Small joint of Fingers → Pustiform dactylitis + tenosynovitis leading to sausage digit.

[3] Ocular: Conjunctivitis

Diagnosis of Reiter's syndrome:

No specific test but there's maybe

* \uparrow ESR * \uparrow CRP \uparrow Leucocytes

[NB] \rightarrow the synovial fluid of the affected joint is turbid
But culture is -ve (sterile)

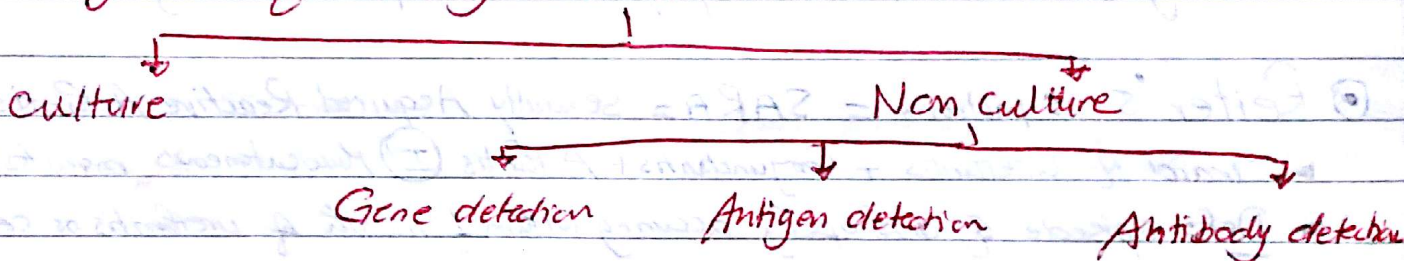
Treatment of Reiter's Syndrome:

► Antibiotics + NSAID \rightarrow in arthritis (indomethacin)

► Cytotoxic drugs (Methotrexate)

► Immunosuppressives (Azathioprine) } In severe cases.

Lab diagnosis of chlamydial infection:



① Culture: "McCoy cell Culture."

• Specimen: obtained from scraping the urethra or cervix by swab

• the specimen is refrigerated, transported to lab by transport medium that contain sucrose, Antibiotic to inhibit other organisms growth.

• then ~~the~~ it's inoculated into culture which is treated by irradiation and antimetabolites to inhibit culture tissue cell division.

that lead to producing Giant cell which allow growth of Chlamydia.

• after 48h the culture stained w/ iodine stain, Giemsa's stain or immunofluorescence stain which detect chlamydial intracellular

Inclusion bodies.

► the test is ~~the~~ Sure diagnostic

► it's done before therapy to detect organism Antibiotic sensitivity

► " " after " to " complete cure.

► it's high cost and may not be available

► obtaining the specimen by scraping is invasive method.

② Non Culture techniques:

► gene detection: → By PCR, LCR

► Non invasive. the specimen from urine.

► Specific, Sensitive, Good screening test. for Asymptomatic P

► Antigen detection: ELISA OR Immuno fluorescence test

ELISA: detection of chlamydial Antigen by putting chlamydial ~~Anti~~ Monoclonal Antibodies then seen by Spectrophotometer it's called chlamydiazyme. / good result and confirm the culture results. / more available, less expensive.

Immuno fluorescence: (Micro Trak test).

using of chlamydial Monoclonal Antibodies conjugated with fluorescein.

these both tests are use for diagnosis Not for testing the Cure.

► Antibody detection: - Serological test that are done by microimmuno fluorescence or Complement Fixation.

• the test is positive if the titre of Ig G rise ④ times or there is Ig M. antibodies.

• it's used in complicated cases such as chlamydial epididymitis, salpingitis, perihepatitis, or chlamydial pneumonia in Neonborn. which are infected from his mother.

Treatment

Treatment of Chlamydia

① First choice Regimens:

▶ **Azithromycin** : 1 gm single dose or divided in 2 days.
high cure rate for chlamydia, gonorrhea.

▶ **Tetracyclines:**

Doxycycline → 100mg 1x2x7

Tetracycline → 500mg 1x4x7

• Should Not be given with milk or milky products cause they inhibit it's action.

• Contraindicated in Pregnant woman or children.

② Alternative Regimens:

▶ **Macrolides:** Erythromycin 500mg 1x4x7
good for chlamydia but not for Mycoplasma hominis.
Safe in pregnancy.

▶ **Quinolons:** Ofloxacin → 400mg 1x2x7



these Antibiotics are ineffective in chlamydia.

① Penicillin → effective in vitro only. but clinically the dose is above 3 million unit. so not used

② Rifampicin → effective in vitro only. but clinically there is rapid development of Resistance.

③ Aminoglycosides, Cephalosporins? are Not effective

[2] Mycoplasma infection

- ⑥ Mycoplasma are very small microorganism. 3 Types
- Ureaplasma urealyticum
 - M. Hominis
 - M. genitalium.

they are normal inhabitants of the urogenital tract in ♀ and ♂.

⑦ Clinical manifestations.

• In Male:

- ▶ Urethritis: Non gonococcal urethritis by M. hominis and Ureaplasma urealyticum.
- ▶ Epididymitis: caused by Ureaplasma urealyticum.

• In Female:

- ▶ Bacterial vaginosis: characterized by offensive homogenous, non pruritic, grey discharge with No signs of inflammation of vaginal wall.
- ▶ Pelvic inflammatory disease: M. hominis, Ureaplasma.

• Both male and Female:

. infection by ureaplasma may followed by Reiter's syndrome

• Infants: pneumonia, Fever, Respiratory distress syndrome (RDS)

Lab diagnosis: depend mainly on clinical picture.

- ① Culture is indicated in Persistent Non gonococcal urethritis that are negative to chlamydia.

the swab are streaked into Mycoplasma/Ureaplasma selective medium that contain: Agar base, yeast, horse serum, Manganese sulphate, urea, and ampicillin to inhibit growth of other bacteria.

after 48 hours: Mycoplasma: Large colonies & Fried egg appearance
Ureaplasma: tiny colonies & brown clour due to ability to utilize Urea

Treatment:
① Tetracycline $\left\{ \begin{array}{l} \text{Doxycycline } 100\text{mg } 1 \times 2 \times 7 \\ \text{Tetracycline } 500\text{mg } 1 \times 4 \times 7 \end{array} \right\}$ as chlamydia
it can cause plasmid resistance.

② Erythromycin: 500 mg 1x4x7 indicated in:
in Resistant cases and pregnancy

Lymphogranuloma Venereum

Cause: Chlamydia Trachomatis serotypes L₁, L₂, L₃. They enter the body through: genital abrasions (minor) then they spread to lymphatic tissue and spread to regional lymph nodes leading to forming multiple star shape abscess which may fused to gether to form (Bubos) or Rupture to form ~~sita~~ Fistula, sinus.

I.P: 1-3 weeks.

Clinical picture: → = 3 stages =

1ry stage → Small painless papule → herpetiform ulcer heal without scar after few days.

in Female it's found in post. vaginal wall, cervix, vulva.
it may be intra-urethral → urethral discharge.

2ry stage → 2 weeks after 1ry stage healing.
it has 2 syndromes.

1 Inguinal syndrome "in heterosexual"

- ① Large, unilateral, painful inguinal lymphadenitis. which matted together forming Bubos "fused multiple abscess" which may rupture lead to multiple sinus discharge pus. Healing with Callus, Contracted Scar. Inguinal
- ② Inguinal Ligament may separate the enlarged LN above and below leading to → Groove sign.
- ③ Fever, malaise, Erythema multiform may be seen.
- ④ Systemic spread (arthritis, Pneumonitis, hepatitis).

2 Genito-rectal syndrome "in woman, Homosexual."

more common in females due to vagino-rectal spread. characterized by

Acute procto colitis: Rectal pain, tenesmus, Passage of blood, mucus per Rectum
O/E: Edematous, Friable rectal mucosa, erosion, ~~Recto~~ Recto-vaginal Fistula
Rectal stricture 3-5 cm above the Anocutaneous margin.
it's rich in lymphatics → Pencil stool, Abdominal pain, Cancer.

tertiary stage ① Late stage: Genital ulcer, Fistula, Rectal stricture.
② Genital syndrome (Genital elephantiasis) :-
in female:- inflammation of vulva → edema & vegetations.
in Male:- edema and elephantiasis (Saxophone penis)

Diagnosis:

- 1 Culture: Aspirated pus from unruptured abscess is grown in yolk sac chick embryos or in cell culture.
- 2 Frei's intra dermal test became obsolete because of low sensitivity and specificity.
- 3 Non culture technique:-
 - (a) Gene detection:- PCR, LCR, Most sensitive, Most specific.
 - (b) Antigen detection:
 - * ELISA: to examine Antibodies to Chlamydia Trachomatis.
 - * Micro (IF) to differentiate bet Chlamydial types:
4 Fold ↑ or more → Antibodies against L₁, L₂/3
 - (c) Antibody detection: Serological test.
Complement fixation test +ve if the titre 1:16 or more.
- 4 Biopsy: → For Bubos → Foci of necrosis + PMNL.
↳ histopathology to exclude Carcinoma.

Treatment: 3 weeks

- ① Tetracycline 800 1x4 x 3 weeks
- ② Doxycycline 100 1x2 x 3 weeks
- ③ Erythromycin 800 1x4 x 3 weeks "(for pregnant woman)"
- ④ Surgical Rt * Aspiration of bubo through near healthy skin to avoid sinus
* Drainage of perianal, peri-rectal abscess.
- ⑤ Surgical Repair: Recto vaginal fistula, Genital elephantiasis
Colostomy if there is rectal obstruction.

D.D: Syphilis, Chancroid, genital herpes, granuloma inguinale, inguinal Lymphadenitis, inguinal hernia.

① D.D of Rectal stricture: → Tumour, Trauma, TB, bilharziasis.

② D.D of Elephantiasis → Filariasis, TB, Granuloma inguinale.

Granuloma inguinale

"granuloma venereum"

organism: *Donovania granulomatis* "Calymmatobacterium granulomatis"
G-ve bacilli, Related Antigenically to *Klebsiella* and
Can't be cultured on artificial media.

IP: 8-80 days or 9-90 days Average (2 weeks)

Clinical picture:


- painless indurated bright red granulomatous mass on genitalia
- The inguinal swelling due to Subcutaneous granuloma Not due to Lymphatic enlargement. Forming Pseudo bubos → break down → Inguinal ulcer → Autoinoculation is a common feature leading to forming kissing ulcer in the adjacent skin.

• Clinical varieties: Ulcerogranulomatous (Common) with types:
Nodular, hypertrophic, Necrotic, Sclerotic, verrucous forms.

Complications: Urethral stricture, deformity, Rectovesical fistula in males., Lymphatic swelling, elephantiasis-like swelling in genitalia, Lower limb SCC in long standing cases, 2ry bacterial infection with fusi form bacilli → Phagedenic ulcer.

Diagnosis:

▶ **Stained smear:** [Wright's Giemsa stain, Wartin starry stain]

 Donovan bodies is mononuclear cells as safty pin like due bipolar distribution of chromatin material.

▶ **Biopsy:** to exclud Carcinoma.

it shows (Hyperplasia in marginal epidermis, dense dermal inflammatory infiltrate consist mainly of Mononuclear cells containing chlamydia trachomatis.

Treatment: for 3 weeks

- * Trimethoprim sulfamethoxazole + tetracycline 1x2 x 3 weeks.
- * Ciprofloxacin 750 1x2 + Erythromycin 1x4
- * Norfloxacin
- * Azithromycin.

Syphilis

Causative organism: *Treponema pallidum*

spirochaete & spiral in shape with 6-12 regular coils it has 2 types of motility

- ① Locomotion in the form of corkscrew or propulsive movement.
 - ② change of shape in the form of angulation, elongation, undulation.
- because the organism is tiny in size it needs dark ground microscope to observe it and its motility. it can be stained by silver or immunofluorescence stains.

Pathology:

► Early phase: the organism enter the body through injured skin or mucous membrane → Local tissue reaction in 2 forms:

- 1. cellular infiltration: with Plasma cells and Lymphocytes
- 2. Vascular reaction: Endarteritis obliterans (thick, hypertrophic intima)

occurs early Not like chronic inflammation.

the organism reaches the regional LN → Lymphadenopathy then → invasion of the blood stream.

► Late stage: there's balanced state between *Treponema* (Asymptomatic) and serum antibodies.

if this balance disturbed → the late manifestations will appear in the form of Gumma, necrosis, vascular changes, Neurological changes.

« Classification of Syphilis »

① Congenital

- early: (infective) manifestations during first 2 years.
- late: (non infective) " after first 2 years.
- stigmata: Permanent scar of early lesions.

② Acquired

- Early: [infective] manifest 1st 2 years
 - 1ry (chance) → one month
 - 2ry (Asymptomatic) → 2 months
- late: [Non infective] manifestations after 2 years.
 - early latent: means the pt is Asymptomatic
 - Late latent
 - Tertiary (Gumma) 3 years
 - Quaternary 20 years or more (CVS, Neurological changes)

N.B latent means the pt is asymptomatic so

early latent means: early (1st 2 years) latent = (Asymptomatic)

Late latent means: late = (after 1st 2 years) latent = (Asymptomatic)

Primary Syphilis

IP = 9-90 days. after the IP there's papule → Painless ulcer (chancres)

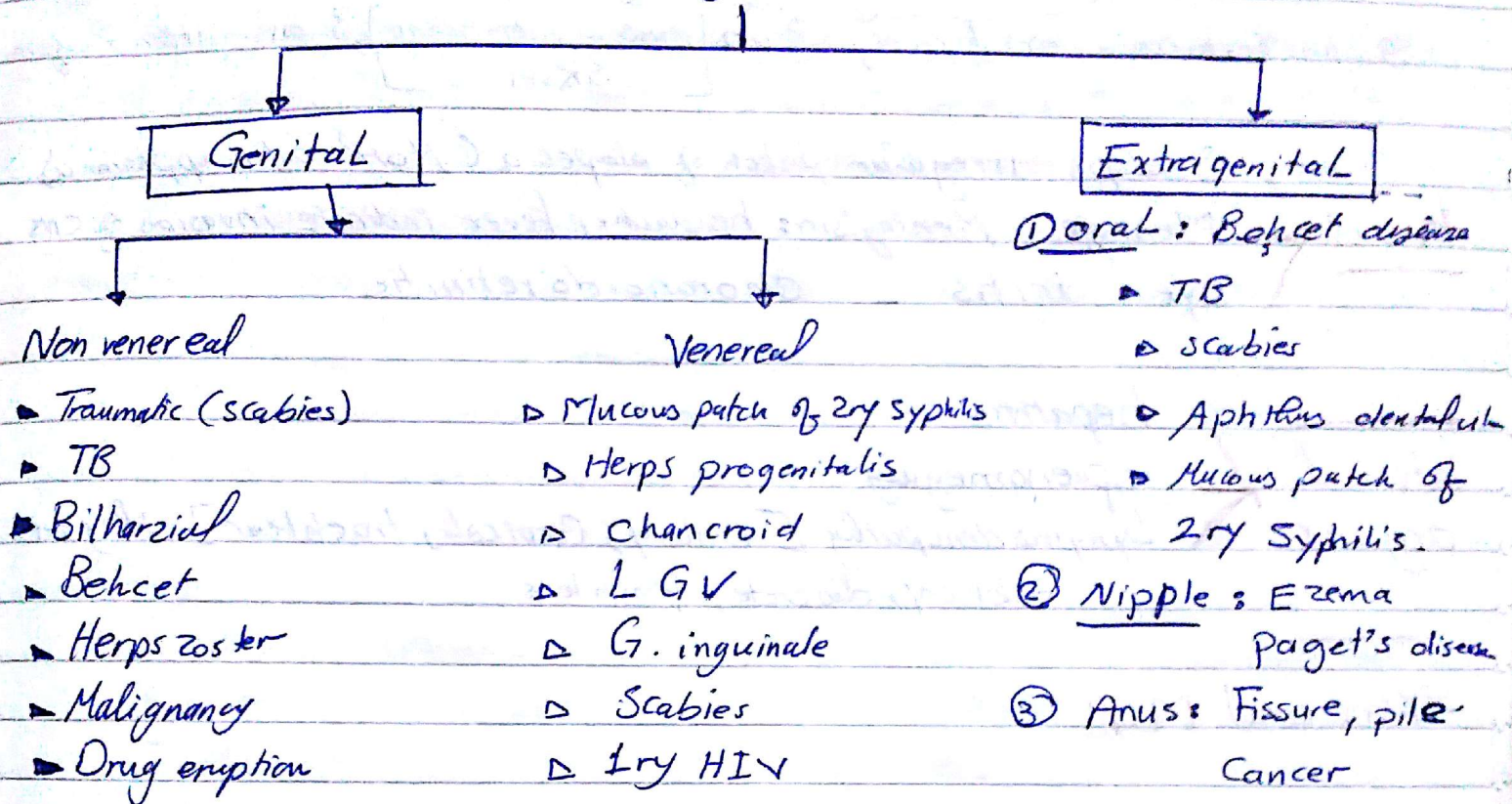
- Chancres**
- ① Single
 - ② Round or oval
 - ③ 0.5-2cm diameter
 - ④ Raised peripherally and sloppy toward the center
 - ⑤ Floor is clean and oozes serous secretion
 - ⑥ Painless due to affection of peripheral nerve endings.
 - ⑦ Indurated base
 - ⑧ Firm
 - ⑨ healing in 2 months with scar.
- Site**
- Genital: Coronal sulcus, glans, Frenulum, urethral meatus
 - Female: Labia majora, minora, meatus (cervix)
 - Extra genital: Lips, Anus.

Chancere Redux: Chancere develops on top of scar of previously healed chancere. Dark ground examination: +ve

Pseudo chancere Redux: Gumma develops on top of scar of previously healed chancere.
(No Treponema, No LN involvement, -ve DG examination)

2 Inguinal Lymph nodes: ① Bilateral, symmetrical, Painless enlargement.
② Rubbery, freely mobile, discrete, Never suppurate

D.D. of chancre



Diagnosis of Chancre

- ① **Dark ground microscope:** the idea depends on making the light rays diverge from the eye that lead to back ground. then these divergent rays face the organism → deflect toward the eye so this deflection makes the organism luminescent against background and we can see the organism and its motility. (corkscrew)
 - ▶ the specimen is collected from Exudate of ulcer OR Aspiration from LN
- ② **Serological test:** +ve in (50%) of patients.

Treatment of 1ry syphilis.

- ① Procaine penicillin: 600,000 IU /IM once daily for 10 days (Short acting)
- ② Long acting penicillin [benzathine penicillin]: 2.4 million IU IM single dose.

2ry stage of syphilis

3 manifestations on head, 3 on [mucous membrane], 3 in internal organs, skin

head

Scalp: irregular patch of alopecia (Moth eaten appearance)
Meninges: Meningism: headache, Fever indicate invasion of CNS
eye: iritis - choroidoretinitis.

internal organs

hepatitis
splenomegaly
Lymphadenopathy [axillary, cervical, trochlear] they are rubbery, discrete, painless.

Skin and M.M

① Skin Rash: Syphilids = syphiloderm.

- maculopapular rashes which are Bilateral, symmetrical, generalized & scaling psoriasiform appearance. Coppery red in colour. it may cause itching.
- it may appear on frontal hair line (Corona venesis) or (crown of venus) line of papules on the fore head just below the hair line.
- the most common site is palm and soles in where the papules are surrounded with white ring → Clinical red Flag
- In immunocompromized pt these papules give central necrosis + pus → pustules.

② Mucous Patch: starts as papules which ulcerate forming a painless, rounded greyish white patch. this patch may become confluent with serpiginous outline from which the slough soon separates → Snail-track ulcer.

- it can be found in Tonsils, tongue, lips, angle of mouth, pharynx, epiglottis → hoarseness of voice and urethra, vagina,

③ Condyloma lata: the most infective lesion of syphilis.

papules which become enlarged due to their location in moist skin areas (axilla, groin, under breast, perianal). they are fleshy looking, dull red, greyish white (due to necrosis), rounded outline with indurated board base (sessile), flat moist smooth surface necrosing surface oozing fluid that is full of Treponema.

<u>Condyloma lata</u>	<u>Condyloma acuminata</u>
<u>Treponema pallidum</u>	<u>Human Papilloma virus</u>
Fleshy, dull red, grayish white	skin coloured
Flat moist smooth surface	Rough, dry, verrucous (cauliflower)
Sessile (board neck)	pedunculated
Indurated base	soft base
Dark ground test +ve	DG: -ve
Serology +ve	Serology -ve
R/ penicillin	R/ 25% podophyllin in alcohol.

Diagnosis of secondary stage:

* Dark ground microscopy: +ve

* Serology +ve in 100% of pt.

Early latent syphilis: * Absence of clinical manifestations-

* Positive serology tests (VDRL, TPHA)

Late latent syphilis: ① Non infectious stage that occurs after the second year of infection and last for years.

① the pt is discovered accidentally (blood donation, Routin checkup)

② the danger is Not to be infectious. the danger is the development of Neurological, Cardiovascular syphilis. so pt should do:

③ CSF examination to exclude Neurosyphilis.

④ X-ray - Echo cardiography for CVS syphilis.

* Routin VDRL, PRP every 3-6 months.

tertiary stage of syphilis.

Pathology

Localized (Gumma)

[Central necrosis surrounded by peripheral fibrosis]

microscopic: • Marked Endarteritis obliterans

• The infiltrate contain plasma cell, Lymphocyte, Fibroblast.

Gumma occurs in covering structures → Skin, S.C, Submucosa

• " " " Supporting " → bones, muscles, joints.

Diffuse

Diffuse syphilitic reactions in the organs (tongue, testis)

C/P

Gumma of Skin

Gumma of S.C tissue

Gumma of M.M

Gumma of supporting structures

① Gumma of the skin: single or grouped nodules, Not symmetrical. Rounded, red, Freely mobile, Heal with thin scar which may become ulcer.

• The Gummatus ulcer has clean surface (wash-leather)

No LN enlargement, Gumma in palm, sole show scales → Psoriform gumma

② Gumma of the Subcutaneous tissue: the same skin Gumma

but in subcutaneous which later attached to the overlying skin → Ulcer with punched out edges and wash-leather floor. it heals with thin, atrophic Non Contractile scar (tissue paper scar)

the main sites: Lower leg - Face - buttocks.

③ Gumma of Mucous membrane: the gumma gives ulcer

which may lead to perforation in the palate, destruction of Nasal septum or laryngeal stenosis.

NB

Tongue Syphilis can occur in

- 1ry syphilis → chancre
- 2ry syphilis → mucous patches
- 3ry syphilis → locally (Gumma)
 - ↳ Diffuse (Diffuse interstitial fibrosis)

Leading to thickening & glazed surface (atrophic papillae),
Fissuring, Leukoplakia (white thick plaques), SCC.

(4) Gumma of supporting structures:

▷ Bones: Flat bones → Syphilitic osteomyelitis.
Long bones → syphilitic periostitis.

▷ Cartilage: perichondritis in: ear, Nasal septum, Costal cartilage.

(5) Other Rare Gummas:

▷ Liver → Localized Gumma & Fibrosis may diffuse → Liver Fibrosis, Cirrhosis

▷ Stomach → " " & dyspepsia like peptic ulcer. Dx: endoscopy or biopsy

▷ Testis → " " & painless enlargement + loss of sensation the gumma may ulcerate in scrotal skin → Anterior Scrotal ulcer
N.B posterior scrotal ulcer → T.B

Cardiovascular syphilis

Syphilis of heart		syphilis of medium vessels	syphilis of large vessels. (Aorta)
Localized gumma of Septum ↓ heart block	Diffuse gumma of myocardium ↓ heart Failure	① Destroy elastic layers → dilatation → aneurysm ② perforation of Intima → Narrowing of cerebral, spinal Blood vessels	① Fibrosis → Aneurysm (saccular type) ② Aortic incompetence ③ Coronary stenosis

Clinical picture

- ① Uncomplicated aortitis: Reterosternal dull aching pain
- ② Aortic Regurgitation
- ③ Aortic Aneurysm
- ④ Coronary ostial Stenosis.

Neurosyphilis

Asymptomatic Meningeal Vascular Parenchyma

1 Asymptomatic Neurosyphilis:

No neurological manifestations but the CSF shows:

- Lymphocytes $> 5/HPF$
- Protein $> 40 \text{ mg\%}$
- +ve serological test

Colloidal gold test:-

- ① the Normal CSF has a certain Albumin, globulin ratio if we add Colloidal gold suspension it will not be participated
- ② if there's abnormal albumin, globulin ratio with predominance of globulin (as in Neurosyphilis) it will participate the Colloidal gold. if the Colloidal test is +ve even if there's No symptoms \rightarrow the pt' will develop Neurosyphilis. (Red Flag of Strokes)

2 Meningeal Neurosyphilis:

① Brain according to the area involved:

- ▶ Vertex: Convulsion, Confusion, Aphasia, headache, vomiting due to \uparrow intracranial pressure.
- ▶ base: Paralysis of Cranial nerves 3, 4, 6, 7, 8 lead to Ocular, Facial, Auditory complications.
- ▶ Ventricles: Hydrocephalus, Subependymal gliosis [pinpoint irregular pupil, loss of light reflex, Preserved accommodation Reflex]

② Spinal cord:

- * Lower motor neuron lesion at the level of Shoulder girdle
- * upper " " " below the level of Cervical region)

③ Vascular affection:

affection of cerebral, spinal blood vessels → Narrowing, thrombosis →
→ ischemia → gliosis → occlusion.

* occlusion of Ant-spinal artery → Paralysis of lower limb, urinary incontinence

* occlusion of Post-spinal artery → Sensory loss below the level of the lesion.

④ Parenchymal Neurosyphilis:

Localized (Gumma)

Brain

Spinal cord

▷ Localized (Gumma) → ↑ intracranial pressure (headache, vomiting, Papilledema)

▷ Brain: diffuse infiltration of cerebral cortex → thickening of the
dura → atrophy, gliosis of cerebral cortex → :

① Personality changes: Delusions, Amnesia, confusion
emotional disturbance.

② Neurotic changes: Depression, Anxiety.

③ Motor changes: Subependymal gliosis (see before), Aphasia
Convulsions, epilepsy.

▷ Spinal cord: diffuse infiltration of the spinal cord → lead to
degeneration of lumbosacral region (Tapes dorsalis)
manifested by:

① Optic nerve atrophy → progressive loss of vision.

② Urine and stool incontinence.

③ Paraesthesia of the leg.

④ Tapes crisis: Acute abdomen, renal colic, tenesmus, laryngeal stridor

⑤ Trophic changes: due to loss of nerve supply to organs:

- skin: perforating ulcers in sole of the foot.

- joints: Charcot joint.

(NB) Charcot joint: painless hypermobile joint that ends by degenerative
changes due to repeated trauma. usually affect knee joint.

Clinically: Painless, hypermobile, deformed.

X-ray: erosion, destruction of cartilage, osteophytic growth,
sclerosis of bony ends.

Congenital syphilis

Treponema pallidum pass through placenta from mother circulation to the ~~be~~ Foetal circulation after the ④ month of pregnancy.

so the result will be one of:

- ① Abortion after the 4th month of pregnancy.
- ② premature baby
- ③ stillborn baby
- ④ Live born baby who will develop signs of syphilis.
- ⑤ Live born baby who will remain healthy.

so we should do blood investigation in which the blood sample is taken from umbilical vein. the result will be according to Profeta law:

- ① Serology +ve : but that's not sure syphilitic baby cause of passive transfer of antibodies from the mother
- ② serology -ve : But Not sure because may be develop later on. so the test should be followed up 3 month later

Congenital syphilis can be classified to:

- ① Early Congenital
- ② Late Congenital
- ③ Stigmata

11 Early Congenital: in ~~first~~ 2 years.

① because of the infection is blood borne so there's No ~~try~~ phase so the manifestations are similar to the secondary syphilis in adult.

NB there may be try syphilis (chancres) only if the baby is recently infected during delivery.

the manifestations:

- ① Skin: generalized skin rash (papular, papulosquamous, Macular)
it may differ in : bullous eruption on palm and sole that rupture → large raw crusted areas.

② mucous patch : may present in Nasal mucosa → Syphilitic Rhinitis

③ Condyloma lata : the same of adult.

↓
Conductive deafness

② Eye: Choroidoretinitis (salt and pepper fundus by ophthalmoscope)

③ CNS: syphilitic meningitis → bulging frontalis, stiffness of neck
Convulsions, hydrocephalus.

④ Respiratory: pneumonia

⑤ Liver, spleen: hepatosplenomegaly, liver cell failure, generalized lymphadenopathy.

⑥ Kidney: Nephrotic syndrome or Acute nephritis.

⑦ Bones and Cartilages:

1st year: syphilitic osteochondritis (inflammation of periosteum, cartilage) of the epiphysis → painful swelling → loss, limitation of movement.
it's known as syphilitic Pseudo paralysis.

X-ray: - Subperiosteal new bone formation (onion peel appearance)
- Loss of density of the upper end of Tibia (Wimberger sign)

2nd year: syphilitic dactylitis (inflammation of periosteum and bones of proximal phalanges) → painless fusiform swelling of the fingers.

⑧ Diagnosis of early congenital syphilis:

* C/P

* DQ examination

* Serology

* X-ray.

⑨ Late Congenital syphilis: after 1st 2 years:

the same manifestations of tertiary syphilis (Gumma) + other manifestations in the form of:-

① hypersensitivity manifestations:

► Interstitial Keratitis: most common. lead to corneal vascularization and cellular infiltration. by slit lamp:

the corneal vascularization (Salmon patch) and the infiltration (ground glass) it ends with scar and opacity.

Rx steroid + Anti syphilitic drugs.

► Cochlear neuritis: Hypersensitivity lead to inflammation of cochlear nerve leading to perceptive deafness.

► Clutton arthritis: Painless effusion in the joint due to hypersensitivity reaction. little impairment of motility.

X-ray: enlarged joint space with NO [bone] changes
[Cartilage]

② bone lesions: 2 types of bone affection.

(A) bone formation: -

- ▶ Parrot's nodes in the skull
- ▶ Higoumenakis sign: thick medial end of clavicle.
- ▶ Sabre tibia: thick anterior border of Tibia.

(B) bone destruction:

destruction of nasal septum with collapse of the lower part of the nose and perforation of the palate with food regurgitation.

③ Neurosyphilis: The same of Adult.

④ Cardiovascular and blood:

CVS: is rare

Blood: Paroxysmal Cold haemoglobinemia: Fever, rigors, Jaundice, dark urine on exposure to cold. due to the presence of haemolysin. that sensitizes RBC in the presence of complement. during cold. haemolysin is Absent in Normal temperature.

3] Stigmata of congenital syphilis:

Stigmata means the permanent scars and deformities that result from early lesions and persist for life.

(A) Stigmata of Early Lesions:

- 1- Salt and pepper fundus by ophthalmoscope.
- 2- Saddle nose: depressed nasal bridge due to improper development of nasal septum.
- 3- High arched palate: due to improper development of maxilla.
- 4- Bull dog face: short maxilla + Frontal bossing of skull.
- 5- Rhagades (Raghad's): Linear scars at mouth angles.
- 6- Hutchinsonian teeth: Small upper central incisors and widely separated, notches.
- 7- Moon's Molars: 1st lower molar shows underdeveloped cusps with irregular surface.

⑥ Stigmata of late Lesions :

1. Corneal opacity
2. optic atrophy
3. sabre tibia
4. Frontal bossing of skull.
5. perceptive deafness (8th nerve)
6. perforation of Nasal septum and soft palate

Diagnosis of syphilis

Serological tests

Non specific

- * Flocculation test
- * Complement Fixation test

specific

- * T.p haemagglutination
- * T.p immobilization
- * Fluorescent Treponema Antibody
- * " Treponema Ab absorption

① Non specific test (Non treponemal tests).

① depend on demonstration of Antigen (Cardiolipin) extracted from beef heart muscle. this Antigen react with the (Reagin) γ globulin in the serum. this reagin is found in large amount in syphilitic patients.

② the test is cheap, good for screening, used in Follow up.

③ May show both false +ve and false -ve results.

► False +ve results :

Technical : Faulty sample collection.

Physical : Pregnancy, Old age

Pathological : other infections : viral pneumonia, Malaria, hepatitis,

Chronic diseases : SLE, Rheumatoid arthritis, Leprosy, Anaemia.

► False -ve results : Prozone phenomenon in which there is high concentration of antibodies in the patient serum. so they give false -ve. therefore we should dilute pt's serum to particular Low concentration.

Continue

(a) Flocculation test.

① purified cardiolipin is mixed with the syphilitic serum Cause Flocculation. this Flocculation can be seen by naked eye and microscope

examples VDRL

PRP = Rapid plasma Reagin: mix Carbon containing Cardiolipin suspension with syphilitic serum → Rotation for 8 minutes → Flocculation is seen.

(b) Complement fixation test [Wasserman Reaction]

in this test the Antigen (Cardiolipin) is used in the presence of Antibody in the serum in the pt's serum will bind the Complement in the 2nd step. ~~and~~ an indicator is added.

• if the pt is syphilitic → the Complement is consumed to prevent haemolysis.

the indicator is formed of sheep red cell.

[2] Specific tests [treponemal tests]

they are accurate but expensive. they demonstrate Treponemal Antigen.

[a] Treponema pallidum Haemagglutination test:

2 tubes : 1st tube Contain Antigen (Sensitized sheep RBC) Covered or Coated with Tre T.P antigen then mix e' pt's serum.

2nd tube Contain (Non sensitized sheep RBC) mix e' pt's serum it's called Control tube

• the test is +ve if the 1st tube shows ~~from~~ agglutination (Button shaped) due to the presence of Antibodies in the patient serum.

[b] Treponema pallidum immobilization test:

the Antigen is virulent treponema (Nichol strain) obtained from infected rabbit. then added to pt's serum in the presence of complement. If the pt is syphilitic the antibodies of the pt's serum will inhibit the motility of treponema.

[c] Fluorescent Treponema Antibody test:

Antigen & suspension of dead treponema (Nichol strain) is placed on a slide with pt's serum.

if the pt is syphilitic → the Antibody will coat the treponema. to see this union we add fluorescein labelled anti human globulin. Called (conjugate) which react with them producing fluorescence seen by UV microscope.

[d] Fluorescent treponema antibody absorption test

[e] Reiter protein complement fixation test.

Treatment of Syphilis.

- The drug of choice is Penicillin.
- The treponema can reach any organ of the body specially CNS in 40%
So the Antibiotic should pass blood brain barrier (BBB)

- Procain penicillin (short acting) can pass blood brain barrier but benzathine penicillin (long acting) cannot pass (BBB)

→ Continue

(A) Treatment of Early stage:-

- ▷ Procaine Penicillin 600,000 IU IM daily for 10 days [total dose 6 million]
- or
- ▷ Long acting benzathine penicillin 2.4 million single dose.

(B) Treatment of late stage

- ▷ Procaine penicillin 600,000 u IM daily for 20 days [total dose 12 million]
- or
- ▷ Long actin benzathine penicillin 3 million unit ^{every} ~~single~~ do month
(total dose 12 million unit)

(C) Treatment of CVS syphilis

the same as late stage + Rx of heart failure or Aneurysm.

(D) Treatment of Neuro syphilis:

Long acting penicillin is Not effective.

The treatment regimen is:

- (1) Crystalline penicillin (4) million unit every (4) hours for 20 days **(IV)**
- (2) Procaine penicillin (2.4 million) IM once daily together with
(1) gram probenecid by mouth for 20 days.
probenecid inhibit the renal excretion of penicillin so it attains higher concentrations of penicillin in the tissue.
- (3) Amoxycillin 3 g twice daily + 1g probenecid for 10 days.

(E) Treatment of Pregnant woman:

the same regimen of penicillin. She should Fi up serological tests monthly till delivery.

if Allergy to penicillin → Erythromycin.

Tetracycline → contraindicated (Maternal hepatotoxicity, staining) baby (teeth defect)

(F) Treatment of Congenital syphilis

According to the health of the baby and need hospitalization or Not.

- (1) ill and need hospitalization → Aqueous procain penicillin 50,000 u/Kg IM For 10 days.
- (2) good and don't need hospitalization → long acting penicillin Benzathine penicillin 50,000 un/Kg IM single dose.
- (3) infant has abnormal findings in CSF → crystalline penicillin 50,000 unit/Kg IM For 15 days
- (4) infant has interstitial Keratitis → Antisyphilitic R + R of eye by prednisolone eye drops + atropine eyedrops
NB Amoxycillin is better than penicillin in this case.
- (5) infant has Optic atrophy or Nerve deafness → Amoxycillin + oral prednisone.

(G) Treatment of Patient with AIDS:

pt with AIDS has early development of Neurosyphilis
so the Rx is the same of Neurosyphilis.
(see below)

	Charcot's joint	Clutton's joint
Syphilitic stage	Tabs dorsalis (Neurosyphilis)	Late Congenital syphilis
Causes:	loss of proprioception Repeated trauma Trophic changes Painless joint enlargement	Hypersensitivity reaction to Treponema → symmetrical joint Swelling Painless syphilitic synovitis.
effusion	+	++++
Bone affection	+ve Fracture	-ve
Cartilage	+ve	-ve
Fate	Hypermobility, deformity	Spontaneously resolved without damage
treatment	Not improved by Rx	Corticosteroids.

	Chancere	chancroid (soft sore)
Causative org	Treponema pallidum	Haemophilus Dureyi.
IP	9-90 days	3-5 days
Number	single	Multiple, Kissing ulcers.
Size	2 mm — 2 cm	0.5 cm — 2 cm.
Edge	Raised at edge, slopping toward center	Undetermined edge
Floor	Clean, Pale, ooze serous secretion	Covered w/ granulation ooze serous
Base	Indurated, Firm	Soft
Tenderness	Painless	Painful
LN	Painless, discrete, Firm Never suppurate	tender, matted, suppurate and form sinuses.
bleeding	doesn't bleed easily	bleeds easily.
DG test	+ve	-ve
Treatment	procaine penicillin 600,000 unit IM daily for 10 days	single dose ▸ Azithromycin 1g ▸ ceftriaxone 250mg IM Multiple doses ▸ ciprofloxacin 1x2x7 E ▸ Erythromycin 1x4x7

Genital Herpes

Chronic std viral infection characterized by Asymptomatic viral shedding

Cause: Herpes simplex type 2 HSV2

Transmission: Sexual intercourse, orogenital, anal coitus

Asymptomatic viral shedding: it means the presence of HSV in mucosa or in the skin in asymptomatic patient. it's due to localization of the lesion in non visualized area → eg cervix.

Primary infection: IP 2-7 days

▶ 1st attack with multiple painful genital ulcers [erythema → vesicle → ulcers → crusting] + fever, malaise, inguinal lymphadenopathy, discharge if the vesicle is found in intra urethral meatus then ruptured, dysuria

▶ Rectal affection in homosexual. CIP Blood, Pus in stool, tenesmus, Constipation

▶ In females → (Vulva, perineum) → discharge, dysuria, dyspareunia, Pain, Fever

Recurrent infection: Less severe and are not due to reinfection.

mild lymphadenopathy, systemic manifestations are uncommon

HSV2 is the cause of 90% of recurrence.

Diagnosis By viral isolation, HSV antibodies:

① Culture: Specimen taken by cotton swab from the base of the ulcer then inoculated in tissue culture cell eg (Hela cell). The isolate is confirmed and differentiated to HSV1, HSV2 by immunofluorescence.

② Tzanck smear: show multinucleated giant cells show ballooning degeneration of their nuclei. differ bet. HSV, H-zoster.

③ Specific Serological tests: a) Western blot (more specific)

b) Direct fluorescent antibody binding Assay shows:
glycoprotein G1 for HSV1 glycoprotein G2 for HSV2

④ PCR is more sensitive

⑤ Biopsy.

Treatment of Genital herpes:

① Treatment of predisposing Factors

② Avoid Sexual transmission

③ Symptomatic Rx - Analgesic for pain

• Antibiotic for 2ry infection.

④ Oral Antiviral:

	Primary infection	Recurrent infection
Acyclovir	200mg / 5 times / day / 10 days	400mg / 3 times / day / 5 days
Famciclovir	400 1X3X10 250mg / 3 times day / 10 days	800 / 2 times / 5 days 1g X 2 X 1 day
Valacyclovir	1gm / 2 times / day / 10 days	500mg 1g then 250mg X 2 1g / 4 times day / 5 days

Condyloma acuminata

Causative organisms: Human papilloma virus, double strand DNA virus. Papovirus Family.

Transmission: Sexually, direct contact, during delivery.

IP: 3 week - 8 months.

C/P: Multiple soft, skin coloured verrucous Discrete papules that coalesce into Cauliflower like mass.

Spontaneous regression may occur in 20-30% of pt^s within 3 months. There are (4) clinical types:

- ▶ Small papular
- ▶ Keratotic
- ▶ Cauliflower like
- ▶ Flat-topped papules/plaque (Cervix)

Site: Areas with increase friction during intercourse.

D. D

① Sexually transmitted

- ▶ Condyloma lata (syphilis): board based, smooth surface lesion
- ▶ Human herpesvirus ②: vesicular eruption, red base, ulceration
- ▶ Molluscum Contagiosum: umbilicated yellow papules with central core.

② Common Benign lesions:

- ① Raised nevi
- ② Seborrheic Keratosis
- ③ Ectopic sebaceous gland

③ Neoplasms: Malignant melanoma.

Diagnosis:

① (Acetowhitening test):

Acetic acid 5% is applied to subclinical penile or Vulvar wart → it will make small white macular lesion.

it's also +ve in Psoriasis, Candidiasis, Seborrheic dermatitis.

② Histopathology:

① Acanthosis, Papillomatosis.

② Stratum malpighii → vacuolated, Rounded hyper chromatic nucleus surrounded by perinuclear Halo (Koilocyte)

- ③ PCR
- ④ Pap smear → For woman.

Treatment

1] Topical treatment: at home

- ① Podophyllotoxin (Podophyllin) twice daily for 3 days and then 4 days off then repeat.
- ② Imiquimod 5% (Aldara): Immune response modifier 3 times weekly at bed time. it is washed after 6-10 hours.
- ③ Green tea extract: Immune stimulant.

2] Clinic therapy:

- ① cryo surgery with liquid Nitrogen
- ② Podophyllin resin 20%
- ③ Trichloro-acetic acid (TCA)
or Bichloro-acetic acid (BCA)
- ④ Surgical removal by CO₂ laser
- ⑤ Electrocautery
- ⑥ Intra Lesional interferon.

HIV

Human Immunodeficiency Virus

Causative organisms

- ▶ HIV 1 : Most Cases in USA, Europ
- ▶ HIV 2 : Most cases in Africa.
- Both types are characteristic by presence of Unique enzyme "Reverse transcriptase" which can form DNA from RNA.
- T. Lymphocytes in human body types & the most important one T₄ (helper) that contain CD4 and T₈ (suppressor) contain CD8
- HIV attack the CD4 receptors lead to Killing of T₄ cells → imbalance T₄/T₈ ratio → ↑ incidence of infections, tumours of AIDS.

Mode of Transmission:

Sexual mode	Donation procedures	Mother to child
▶ Anal intercourse (homosexual)	▶ Blood Transfusion	▶ In-utero transmission
▶ vaginal intercourse	▶ Contaminated needles	▶ at Birth
▶ Oral sex	▶ Organs and tissue donation	▶ Breast milk.

Clinical Stages

① Primary stage (Sero conversion).

IP 2-1 month — 5-6 months.

the pt have one or more of:

- ① Repeated attacks of oral, oesophageal ulcers (Candidiasis).
- ① Maculopapular rash all over the body including palm, sole.
- ① Generalized Lymphadenopathy.
- ① Aseptic meningitis-like picture.

Lab: ↑ HIV P24 Antigen and Antibodies against virus.

② Early stage (Asymptomatic):

① may be Asymptomatic or ↓ immunity $\xrightarrow{\text{Leukto}}$ thrombocytopenia → purpura. CIP: Irregular Fever, Generalized lymphadenopathy.

Lab: detection of virus in plasma but in Low Levels

- ▶ Increased Concentrations of Cytokines (TNF α) Tumour Necrosis Factor.

③ Intermediated phase (AIDS Related Complex):

- ▶ pt is more susceptible for infection: eg: pneumococcal, Shigella, Salmonella, Haemophilus, (H. Zoster) is more common, pelvic inflammatory disease, child hood exanthema is more serious.
- ▶ Lab: Increased proportions of infected T_H cells.

④ Late HIV:

- ▶ Terminal phase which T_H may reach zero lead to profound immunodeficiency.
- ▶ pt have full picture of AIDS with infection and Kaposi sarcoma.

Predictors of progression (prognosis)
Clinical markers ————— Lab Findings.

(A) Clinical markers

1- systemic manifestations: (Fever, diarrhea, weight loss, bad General Condition).

2- Mucocutaneous manifestations:

- ▶ Oral candidiasis (thrush): cheesy white membrane on mouth cavity and mouth angles that means ↓ CD₄ cells
- ▶ Oral hairy Leukoplakia: greyish white thick lesion on both tongue sides

NB Hairy is a histological term means (Keratin projections) like hair

- ▶ H-Zoster is most important finding specially if it involve more than one dermatome.

(B) Lab Findings:

(1) Viral load (presence of HIV RNA in plasma) by estimated By RT-PCR reverse transcription polymerase chain reaction it means the quantity of HIV in plasma.

(2) CD₄: CD₈ ratio: in many viral infections it's less than ① due to ↑ CD₈ ~~but~~ In AIDS it's severely reduced due to absolute reduction of CD₄.

(3) Serum P24 antigen, P24 antibody.

P24 is a viral protein. The presence of P24 antigen and Absence of P24 antibody indicates bad prognosis.

(4) Pancytopenia: There may be Lymphocytopenia, Leukopenia, Anaemia, Thrombocytopenia.

(5) B₂ microglobulins: Small components of lymphocyte membrane if it is ↑ → it indicates bad prognosis.

(6) Neopterin: Product produced by activation of immunity if it is ↑ in blood or in urine it indicates high risk prognosis.

Clinical picture of AIDS

[1] Neurological manifestations:

- ▶ HIV encephalopathy: (AIDS Dementia Complex): start with gradual onset of memory changes, Psychotic symptoms, hallucinations, confusion, Global dementia is common.
- ▶ Myopathy: Spastic paraplegia, bladder dysfunction, Peripheral neuropathy.
- ▶ Encephalitis ▶ Retinitis ▶ Meningitis.

[2] Respiratory manifestations:

- ▶ Pneumocystis Carinii pneumonia: Fever, dyspnea, Cyanosis.
- ▶ Lymphocytic interstitial pneumonitis: Epstein Barr virus is common in pediatric AIDS.
- ▶ Extensive pulmonary Kaposi Sarcoma.

[3] Gastro-intestinal manifestations:

- ▶ Oral ulcers, dysphagia, weight loss (Candida), Diarrhea.
- ▶ Slim disease (Enteropathic AIDS), ~~diarrhea~~ due to protozoal infection or direct invasion of HIV → destruction of the gut autonomic plexi.

[4] Lymphatic and blood manifestations:

- ▶ Lymphoma → T cell lymphoma, B cell lymphoma, Burkitt Lymphoma.
- ▶ Blood: Anaemia, Leukopenia, Thrombocytopenia.

5] Dermatological manifestations: Non malignant Conditions Malignant Conditions

① Non malignant Conditions:

- Dry skin, scaly erythema of seborrheic dermatitis commonly affect the face and associated with pityrosporum oval.
- Generalized macules, papules including palm, sole.
- ② viral diseases are common and characterized by:
 - oral hairy leukoplakia, chronic ulceration of Herpes simplex
 - extensive genital warts, Molluscum Contagiosum.
- ③ Bacterial diseases: (Folliculitis) and syphilis.
- ④ Fungal diseases: Oral moniliasis

⑥ Malignant Conditions:

- ▶ Kaposi sarcoma: start as violaceous lesion looks like bruise that gradually darkens. it's flat in the begining then raised to form firm nodule then plaque. it becomes itchy and painful. it's found commonly in leg, lower limb, GIT, Liver, lung & intraliesional vinblastine, Radiotherapy, cryo, surgery
- ▶ Squamous cell Carcinoma, basal cell carcinoma.

Diagnosis of HIV detection of virus detection of viral antibodies

① Detection of virus:

- HIV culture: expensive, time wasting, depend on cultivation of pt lymphocytes in the presence of interlukin.
- HIV Antigen test: (P24 antigen)
 - it's present on the core of the virus.
 - Positive Results suggest high titre of circulating virus.

② Detection of viral antibodies (Serological tests):-

① ELISA: enzyme linked immuno sorbent Assay.

techniques the Antigen is prepared from T-lymphocyte then added to pt serum. if the pt is HIV +ve →

ie. he has antibodies which will bind to Antigen
NB ① an immunoglobulin linked to colour forming enzyme is added to detect the antigen antibody reaction by spectrophotometer.

② ELISA should be confirmed by Western blot test.

③ Western blot test:

depend on HIV proteins which are separated in a gel according to molecular weight and electrophoretic mobility then added to patient serum.

if the pt is +ve ie he has antibodies → it reacts with these proteins and form a band on the paper which contain the protein gel.

These proteins are P24, P31, GP41, GP120, GP160

Anti viral (HIV) drugs

① Nucleoside Reverse Transcriptase Inhibitors (Nucleosid)
inhibition of Reverse transcriptase enzyme which convert RTIS
RNA to DNA lead to termination of virus replication. eg:

② Zidovudine (ZDV) or Azidothymidine (AZT)
dose 600 mg/day S-E: bone marrow depression, Myopathy.

③ Didanosin (DDI) 500 mg/day S-E peripheral neuropathy, pancreatitis

④ Zalcitabine (DDC) 1-5 mg/day

S-E: peripheral neuritis, Pancreatitis, GIT ulceration.

② Non Nucleosid RTIS They bind to different sites of RT enzyme lead to inhibit it they are effective in ZDV resistant strains. eg:

③ Nevirapine: S-E: depression, Liver dysfunction

④ Delavirdine: S-E: Steven Johnson syndrome + liver dysfunction.

③ Protease inhibitors: HIV protease enzyme is responsible for production of viral proteins

examples: Indinavir, Ritonavir S-E: GITT: Nausea, vomiting, diarrhoea
they are used as a part of triple therapy:
AZT + DDI + Protease inhibitor

Urethral Discharge

physiologic
Prosemen, Prostatorrhea

pathologic
Non gonococcal (Trauma - infection - neoplasm)
gonococcal

[1] Physiological:

in male

Prosemen: Few drops of mucoid fluid comes out from the male urethra during excitation stage of sexual response cycle secreted from Cowper's gland.

prostatorrhea: Few drops of prostatic secretions that comes out during straining conditions as: Urination, defecation and cough.

in Female

⊙ Pre coital excitation: in excitation stage of Female response cycle it's clear fluid from vaginal wall due to vasocongestion.

⊙ Premenstrual discharges: it's due to hormonal changes as pregnancy and ovulation or premenstrual period it's transparent, non irritant, odorless.

[2] Pathological:

a) Gonococcal: profuse, yellow, Purlent, scanty, mucoid.

b) Non Gonococcal:

1. Traumatic: ♦ physical trauma:

in males in pt. had STDs and they still manipulate urethra repeatedly for remenant of discharge this lead to abrasions, irritation.

in Females trauma to cervix or vagina during instrumentation or insertion of IUDs.

♦ chemical trauma:

in males pt with stds and they irrigate the urethra repeatedly with antiseptic solutions → irritation.

in Females using vaginal washes, Contraceptive gel → irritation
inflammation

[2] Infections:

Bacterial: Chlamydia, Mycoplasma, Gardnerella (vagina)

Viral: Herpes progenitalis

Protozoa: Trichomonas vaginalis

Fungal: Candidiasis

[3] Neoplastic: Cancer of urethra → Necrosis
2ry infection → purulent discharge.

Diagnosis of urethral discharge:

(1) history

① Gonococcal infection (2-7) days, Acute, Marked dysuria, dyspareunia, discharge.

② Non Gonococcal (7-21) days, Gradual, moderate (dysuria, dyspareunia, discharge) except Herpes progenitalis is Painful

(2) Examination.

Examination of meatus

discharge (colour, character, amount)
ulcers or vesicles.

③ Palpation → tenderness in inguinal mass (Neoplastic)

(3) Laboratory examination

① Diagnosis of inflammation

■ Urethral smear (urethritis)

shows more than 5 PMNs/HPF (x1000)
in gram stained smear.

■ Urine tests

② PMNs tests shows

more than 15 PMNs in 1st 15 ml
of urine (morning voiding).

③ Leucocyte Esterase test: (LEt).

means the esterase enz. which released from degenerated leucocytes.

② Diagnosis for infectious Agent

① Gram stain: For Gonococci
intracellular, extracellular G^{-ve}
diplococci (Kidney shaped)

② Culture: if the Gram stain
indicates NGU

: Pelvic Inflammatory Disease:

it is a spontaneous infection of sexually active non pregnant woman with prior cervicitis caused by *C. Trachomatis* or ~~gonorrhea~~ ^{Nisseria} gonorrheal infection that lead to endometritis and end by salpingitis.

Causative organisms:

- | | |
|---|---|
| <ul style="list-style-type: none">☐ Chlamydia trachomatis☐ Mycoplasma, ureo plasmae☐ T.B☐ Anaerobic bacteria: peptococcus and Bacteroides☐ Aerobic bacteria: streptococci, E. coli. | <p>Nisseria</p> <ul style="list-style-type: none">☐ Nisseria Gonorrhea.☐ Actinomyces. |
|---|---|

Clinical picture:

- Abdominal pain: mild to severe in lower abdomen for 2 weeks
- Gonorrheal pain: rapid onset, short duration, high fever
Liver tenderness but Pain may be absent in 50% of pt.
- Cervical discharge: in 50% of pt. inter menstrual period.
- Bleeding (excessive menstruation)
- Nausea, Vomiting, dyspareunia

Complications: short term - Long term.

☐ Short term:

- peri hepatitis (Fitz - Hugh Curtis syndrome).
Liver capsule affection through direct spread or blood spread or lymphatic spread → pain in Rt hypochondrium.
- pelvic abscess (Adnexal mass) diagnosed by Ultrasonography or laparoscopy.

☐ Long terms

- ① Recurrence
- ① infertility
- ① Ectopic pregnancy
- ① Chronic pain: due to change in the elastic tissue of the organs to an inelastic scar tissue lead to pain, dyspareunia, pelvic congestion.

Diagnosis:

① History

pain, discharge, dysuria, dyspareunia, bleeding.

② Examination

Fever 38°C , Lower bilateral abdominal tenderness, Cervical discharge, Cervical motion tenderness, Adnexal mass.

③ Lab

• Cervical secretions: For G+ve \rightarrow Pus cells $> 5/\text{HPF}$
G-ve \rightarrow intracellular diplococci

• Blood: \uparrow ESR, Leukocytosis

• Laparoscopy: is the most accurate method

• US or CT: For adnexal mass (Pelvic abscess)

• Culdocentesis: Suction of purulent material from peritoneal cavity.

\uparrow tubal isoenzyme in peritoneal fluid

• Urethral swab from male: For culture, start his treatment

Criteria For diagnosis:

the patient must have the ③ signs:

1. Lower bilateral abdominal tenderness with or without Rebound tenderness.

2. Tenderness on motion of cervix, uterus.

3. Adnexal tenderness.

and at least one of these signs:

• Positive gram stain of endocervix for G-ve intracellular diplococci.

• Fever $> 38^{\circ}\text{C}$

• Leukocytosis $> 10^9/\text{L}$

• Purulent material obtained from peritoneal cavity by Culdocentesis or Laparoscopy

• Pelvic Abscess.

Treatment of PID

Regimen 1:

- Penicillin G 12-20 mega unit in divided doses For 3-4 days.
- Metronidazole 500 mg / 8h For 2 weeks.
- Gentamycin 2-5 mg/kg/day For 5-7 days
No Longer Used

Regimen 2:

- = Ampicillin or Amoxycillin 3g + proppenicid 1g twice daily For 4 days. For uncomplicated gonorrhea
- [plus]
 - tetracycline 500mg 1x4 or Doxycycline 100mg 1x2
- For 10 days For chlamydial infection
- plus metronidazole 500mg / 3 times/day For 10 days For Anaerobic infection.

Recommended Regimens

Ceftriaxone 250mg → IM single dose
Doxycycline 100 → 10 days
Metronidazole 500 → 10 days

Cefoxitin 2g single dose
Doxycycline 100 1x2 x 14
Metronidazole 500 1x3 x 14

Sever Cases

Cefotetan 2g IV / 12 hours
Doxycycline 100 1x2

Cefoxitin 2g / 6 hours
Doxycycline 100 1x2
Clindamycin 900 mg IV / 8h

Epididymitis

physiology of epididymis:

• narrow tightly coiled tube (comma) shaped which connecting the efferent ducts from the testis to the vas deferens.

• it's divided into:

① Head (Caput) ② Body (Corpus) ③ Tail (Cauda)

• Histology:

- ▶ Columnar cells tall, ciliated, clear PAS +ve
- ▶ basal contractile cells actin +ve, tubules have muscular coat

④ Function of epididymis:

Sperm transport by:

- Cilia, hydrostatic pressure
- Rhythmic contraction of contractile muscles.

Sperm maturation

- ▶ Attain sperm motility
- ▶ Attain sperm fertilization ability
- ▶ Sperm protection from

Chemical damage

through proteinase inhibitors, Antioxidant.

Immunological damage

through: blood epididymal barrier production of factors inhibit T-cell activation.

⑤ Epididymal markers:

- ① L-Carnitine
- ② 5α glucosidase.
- ③ Glycerophosphoryl choline.

Epididymitis

acute: < 6 weeks

chronic: > 6 weeks

• inflammation of the epididymis

Causes

Infective

- ① 2ry to std in pt < 35 years → NGU gonorrhea
- ② 2ry to UTI in pt > 35 years: E. coli, Pseudomonas
- ③ TB, Bilharziasis, Mumps, Candida, Brucellosis, meningococci, Filariasis.
- ④ Pre pubertal → 1ry → E. coli
→ 2ry: mycoplasma, Adenovirus, enterovirus

Non infective

- ① Vaso-epididymal Reflux Syndrome Not respond to Abs
- ② Traumatic
- ③ Drugs: Amiodarone
- ④ Behcet disease.

Route of infection:

~~But~~ Direct: Retrograde extension from vas deferens infection.
Blood: rare

Lymphatic: perivascular plexus.

C/P: Acute onset of Fever, Headache, malaise, Nausea
Scrotal pain, edema, abdominal pain.

Examinations

- Epididymis is tender, swollen (+) 2ry Hydrocele.
- Suppuration may occur → lead to sinus formation.
- Infertility: due to fibrosis; obstruction or destruction of testis.

Diagnosis:

- History
 - Examination
 - Colour Flow Doppler
 - Scrotal U/S
- Can detect 2ry hydrocele, vascular or testicular damage
- Urethral Gram stain in urethritis.
 - Urine analysis, culture.

D.D 4T + others

① Testicular Torsion: Younger pt, -ve Gram stain
-ve culture,

U/S: ↓ Blood Flow in torsion
↑ blood Flow in epididymitis.

② testicular tumours: Firm, painless, not responsive to Abcs

③ Trauma: History

④ T.B: Firm, swollen in epididymis but not tender
+ thickened or beaded vas.

⑤ Others: Hydrocele, varicocele, UTI, Cyst,
Epididymal neuralgia.

Complications: →

Chronicity, infertility, testicular involvement.

Treatment:

▷ Bed rest, ▷ NSAID

▷ Scrotal support.

▷ Antibiotics:

■ if 2ry to stds: - Ceftriaxone 250 mg IM single
+ Doxycycline 100 1x2x10
+ Treatment of partner.

■ if 2ry to chlamydia or gonorrhea:
Ceftriaxone 250 mg single
+ Levofloxacin 500 1x1x5
or ofloxacin 200 1x2x10

■ if 2ry to enteric organism
- Levofloxacin 500 1x1x10
- ofloxacin 200 1x2x10

■ Surgical Rx
for hydrocele → hydrocelectomy.

Prostatitis

Prostate gland: a conical shape gland located in front of rectum just below the urinary bladder.

- it has an opening in the prostatic urethra
- it consists of muscular tissue & glandular tissue.
- it has (3) lobes one central and 2 lateral lobes

Blood supply:

- prostatic branches of inferior vesical artery
- small branches from middle rectal artery
- pudendal vessels.

Venous drainage: prostatic venous plexus between true, false capsules

Lymphatic: ① Internal, external iliac LN ② hypogastric LN ③ periprostatic LN ④ presacral ⑤ pelvic LN

Classification of Prostatitis:

- ① Acute Bacterial
- ② Chronic Bacterial
- ③ Chronic Abacterial (CPPS)
- ④ Asymptomatic inflammatory

① Acute Bacterial.

Causes:

- Urinary pathogens: E. coli, Pseudomonas, Klebsiella
- STDs: Gonorrhea, Chlamydia

C/P - Sudden onset of fever, malaise

- Urinary symptoms: frequency, dysuria, Retention (Common)
(Common than pain)

- Rectal pain, tenesmus, perineal discomfort suggesting Prostatic abscess.

Examination: tender swollen gland, soft or fluctuant areas with abscess formation.

PR examination: should be avoided in ill and elderly patients

② Chronic Bacterial.

prostatic inflammation with recurrent UTI with a bacterial pathogen localized to the prostate.

Causes: the same as acute bacterial + TB

Factors lead to chronicity:

- Intraprostatic urinary reflux: lead to invasion of urinary pathogen to prostate and formation of prostatic calculi which is important site of chronicity.
- Prostatic antibacterial factors: Zinc, Complex polypeptide that lowers zinc level
- Changes in prostatic pH: in inflammation from 6.6 to 7.7

C/P: the same of acute but the pain is the most common complain. it's in these sites

(supra-pubic, perineal, Lumbar discomfort)

- Haemospermia, low libido, PE, morning drop.

Examination: PR: enlarged, firm, tender. may be nodular in TB

Prostatic smear: evidence of inflammation:

- ① Number of neutrophils: $< 5 / \text{HPF}$ no inflammation
 $5 - 20 / \text{HPF}$ equivocal (Repeat)
 $> 20 / \text{HPF}$ inflammation.

② Character of shedded cells:

- Nucleus shrinkage (Pyknosis)
- Fragmented (Karyorrhexis)
- dissolution (Karyolysis)

• cytoplasm: swollen, acidophilic

③ Molecular evidence: \uparrow IgA, Albumin, α -1 antitrypsin
acid glycoproteins, α -1 anti chemotrypsin

~~Trans-rectal USS TRUS~~

Trans-Rectal USS TRUS: High density ecchoes, mild rang ecchoes, eccholucent zones, ejaculatory duct calcification, Capsular irregularity, Capsular thickening, periurethral zone irregularity (Halo) sign.

Prostatic Antibodies by ELISA:

↑ IgA, IgG in post massage urine
(differs between acute, chronic)

Stamey Score system of prostatitis

Score	Leucocytes in post massage urine	Diagnosis
0	0	Prostatodynia
1	< 50	
2	50-99	Border line prostatitis
3	100-200	Prostatitis
4	> 200	
5	Of past history of prostatitis	

(3) Chronic Abacterial type III

- * Most common - 90% of pt'.
- * it occurs in pt' with history of Gonorrhea or NGU.
- * in pt with chronic prostatic Symptoms: Aching pain in the groin, perineum, buttocks, urethra, testis.
the pain is worse after long period of sitting.
the pain is " during ejaculation.
Frequency, urgency, dysuria, discharge is uncommon.

Examination: localized area of tenderness, Purulent prostatic secretions.

it's classified into 2 types:

- ⊙ type III A (inflammatory): ↑ leucocytosis, expressed prostatic secretions (EPS)
- ⊙ type III B: prostaticodynia

Prostatodynia:

the pt has symptoms suggesting prostatic inflammation with prostatic secretion characterized by

- * Not purulent
- * -ve culture of urine

symptoms: the same of chronic bacterial prostatitis.

but more frequent, less difficulty in micturition

- * Stress Factors are present: Extramarital relations, venereoplasia

- * there is involuntary voiding dysfunction (sphincter spasm, + bladder areflexia).

α-adrenergic blockers improve voiding symptoms.

D.D: Prostatic Carcinoma interstitial cystitis

• Carcinoma in situ

R: Reassurance; pass urine frequently, tranquilizers.

(4) Asymptomatic Prostatitis.

it's an incidental finding on prostatic biopsy or expressed prostatic secretion (EPS)

- * purulent prostatic fluid in: NGU, Reiter's disease

Treatment of Prostatitis:

Acute bacterial: - bed rest - analgesics, NSAID

- Antibiotics: Cefazolin, penicillin for 2-3 weeks

- Drainage if there's abscess via

Transurethral drainage or perineal route.

Chronic bacterial: - Antibiotics: lipid soluble to penetrate prostatic capsule:

* Ciprofloxacin 500 1x2x2 weeks * minocycline 100 1x2x2 weeks

* tetracycline 500 1x4x3-4 weeks * Erythromycin 250 1x4x3-4 weeks

* Trimethoprim/Sulphamethoxazole 800 x2 3-4 weeks * Norfloxacin

Chronic Abacterial:

(12) weeks of Antibiotic despite of Abacterial

+ NSAIDs + Reassurance + frequent voiding every 4 hours.

Complication of prostatitis:-

Complications of Prostatitis:

- * Male sexual dysfunction
- * infertility
- * epididymitis
- * Allergic diseases: iritis, arthritis, polymyositis.
- * impotence
- * cystitis, urethritis
- * bladder neck obstruction

Balanitis

= inflammation of glans penis, it's common in uncircumcised men.

= if the prepuce is involved → Balanoposthitis.

PPF: ① irritation: by smegma (secretion), urine alkalies, external contact.

② trauma: by clothes + poor hygiene

③ Chlamydia, virus

④ Diabetes mellitus

⑤ Exposure to venereal or vaginal pathogens.

types → infective causes
→ Non infective causes.

① infective causes: (Candidal, bacterial, parasitic)

⑤ - Candidal balanitis: glazed erythematous surface + scaly edges, satellite eroded pustules + moist, crud like. diagnosed by Microscopy, Culture

R/ topical imidazole or Flucanazole iso (single)

⑥ - Bacterial balanitis group B, B. hemolytic streptococci
erythema, edema of glans penis, coronal sulcus
R/ Ampicillin + Cephalexin

⑦ Anaerobic erosive balanitis: Bacteroid sp
R/ metronidazole.

③ Necrotizing Fasciitis of genitalia: cellulitis like (Fournier's disease) that may progress to painful blue-brown ecchymotic lesion Rx - Broad spectrum Antibiotic

④ chlamydia

⑤ syphilitic balanitis

⑥ Mycoplasma Rx

③ Parasitic balanitis

Entamoeba histolytica, Trichomonas.

② Non infective balanitis:

① Circinate erosive balanitis: Circinate, polycyclic edge may be mucosal presentation of Reiter's disease

② Plasma cell balanitis: uncircumcised, young, old men. one or more plaques on the gland and may persist for years.

Histopathology: dense band like dermal infiltrate of plasma cells, Capillary dilatation, Hemosiderine deposition.

③ Fixed drug eruption balanitis.

④ balanitis xerotica obliterans (Lichen sclerosus et atrophicus) itchy, ivory like macules on glans which may cornified to the meatal orifice → Contracted, surrounded by atrophic meatal collar.

Treatment:

1- Rx of the cause

- Non Specific balanitis:

local Carbamazepine
Local CST
Local Antiseptic

- Phimosis: subpreputial irrigation with normal saline + sulphonamides + Circumcision.

Symptoms	Candidiasis	Trichomonas	Bacterial
Vulvar irritation	Sever pruritus	may be present	Absent
Vulvar sore	+	++	+
Discharge	Thin, minimal, white curdy, cheesy but odorous odourless	profuse, yellowish, watery frothy, offensive	thin, fishy, smooth homogenous, greyish
Dyspareunia	++++	—	—
Signs vaginal wall	adherent cheesy plaques which bleed on removal	Reddened with straw berry cervix	Normal
Vulvar inflammation	++	—	—
lab			
Vaginal pH (4-5)	< 4.5	> 4.5	> 4.5
Amin test	-ve	-ve but may be +ve	always +ve
Smear	G+ve yeast spores, pseudomycelia	saline wet mount → motile trichomonas	Direct microscopic wet mount → clue cells.
Treatment	<ul style="list-style-type: none"> ▶ Miconazol, clotrimazol 200 vaginal 1x1x3 at bedtime ▶ Nystatin 100,000 vaginal 1x1x3 ▶ oral Ketoconazol ▶ Fluconazol 150 single dose ▶ itraconazol 400 2x2 ▶ Yoghurt <i>Candida Albicans</i>. 	<ul style="list-style-type: none"> ▶ Metronidazol 2g single dose ▶ Rx of sexual partner. <i>Trichomonas vaginalis</i> 	<ul style="list-style-type: none"> Metronidazol 400 1x2x5 Ampicillin 500 1x4x7 in pregnant <i>Gardnerella vaginalis</i>